
Introduction and High Level Steps to Use MRED's RESO WEB API

Overview

Midwest Real Estate Data (MRED) provides access to an API that allows a user to query, real-time, its listing and roster database. MRED's Web API implements OpenID Connect, the protocol chosen by Real Estate Standards Organization (RESO www.reso.org).

The **Web API is NOT intended to be a bulk download tool**. Rather, it is intended to be used to query, on demand, data that a website or application displays in a given context. Currently, RETS 1.X is the platform of choice for bulk downloading data to be stored on a server.

Based upon the OAuth 2.0 specifications, OpenID Connect uses REST/JSON message exchanges, which typically makes it easier for developers to implement. This document provides the necessary steps, including OpenID Connect and OData references, for third-party vendors to implement an OpenID Connect Client to MRED's WEB API server.

Step 1: Familiarize yourself with OpenID Connect Fundamentals

If you have never used OpenID Connect or need a refresher, there are numerous sources available. One useful starting point is the OpenID Foundation site and, in particular, its FAQ page at: <http://openid.net/connect/faq/>. From there you can navigate around the site and/or use the additional references provided below.

Step 2: Implement an OpenID Connect Client

An OpenID Connect client facilitates a user's authentication into a secured application through an OpenID Connect Server. If you do not already have or use an OpenID Connect client, then based on your application and the flexibility you require, you may prefer to develop one. The OpenID Foundation site provides in-depth guidance for development at: http://openid.net/specs/openid-connect-core-1_0.html

Alternatively, there are many open source client libraries available, some of which are listed at:

<http://openid.net/developers/libraries/>

Note: MRED's Web API supports authorization code and/or implicit flow.

Step 3: Send us your Redirect URLs

When you are ready to test, your OpenID Connect Client, email your preferred Redirect URIs to MRED at retsupport@mredllc.com. MRED will enable your account and send you access and API information (credentials, endpoints, etc.) within 3 business days.

The API information that will be returned to you includes the following:

Client Credentials:

These are the credentials you will use to get authorization through the OpenID Connect Security portion of the Web API.

Client ID:

<....>

Client Secret:

<You will need this Information to complete setup and it will be sent in a separate email with appropriate subject>

Authorize end point:

<https://connectmls-api.mredllc.com/oid/authorize>

Token end point:

<https://connectmls-api.mredllc.com/oid/token>

Userinfo end point:

<https://connectmls-api.mredllc.com/oid/userinfo>

Step 4: Familiarize yourself with OData

MRED's Web API supports Open Data Protocol (OData) for querying data. OData is an application-level protocol for interacting with data via RESTful web services. A good intro to OData concepts can be found at <http://www.odata.org/getting-started/basic-tutorial/>

Browser Query samples:

While the Web API is intended to be used programmatically from a client application, the following examples exhibit how you can use OData to query from a browser.

Example 1: Retrieve metadata:

[https://connectmls-api.mredllc.com/reso/odata\\$metadata](https://connectmls-api.mredllc.com/reso/odata$metadata)

Example 2: Search by MLS Number:

[https://connectmls-api.mredllc.com/reso/odata/Property?\\$filter=ListingId eq '06946186'](https://connectmls-api.mredllc.com/reso/odata/Property?$filter=ListingId eq '06946186')

Example 3: Search by List Price:

[https://connectmls-api.mredllc.com/reso/odata/Property?\\$filter=ListPrice gt 999999](https://connectmls-api.mredllc.com/reso/odata/Property?$filter=ListPrice gt 999999)

For further information on OData and its use in RESO Web API, download the latest specification from: <https://www.reso.org/downloads/>.

MRED RETS Support Team

retssupport@mredllc.com

Office: (630) 955-0011

Midwest Real Estate Data LLC Data License and Access Agreement for Vendors

This AGREEMENT is made and entered into by and between Midwest Real Estate Data LLC ("MRED"), with offices at 2443 Warrenville Road, Suite 600, Lisle, Illinois 60532; and _____ ("Licensee"), a _____ individual/partnership/corporation/limited liability company with offices at _____.

DEFINITIONS

1. For purposes of this Agreement, the following terms shall have the meanings set forth below.

Confidential Information: "Confidential Information" means information and material proprietary to the disclosing party, or designated "confidential" by the disclosing party, and not generally known to the public that the receiving party may obtain knowledge of or access to as a result of this Agreement. Confidential Information includes, but is not limited to, the following types of information and other information of a similar nature (whether in oral, visual, audio, written or other form): (a) all MRED Data, except to the extent to which this Agreement permits its disclosure; (b) IP addresses, access codes and passwords; (c) any information the disclosing party obtains from any third party that the disclosing party treats as proprietary or designates as Confidential Information, whether or not owned or developed by the disclosing party; and (d) any information designated as confidential or private from time to time by any applicable state, federal, local or other law, regulation or directive. Confidential Information does not include information that is or becomes publicly available by other than unauthorized disclosure by the receiving party; is independently developed by the receiving party; is received from a third party who has lawfully obtained and disclosed it without breaching any confidentiality agreement; or is already known by the receiving party at the time of its disclosure.

Data Interface: The transport protocols and data storage formats described in Exhibit A, if any. If no such description appears in Exhibit A, then the Data Interface consists of those protocols and formats typically provided by MRED for use by other licensees of the MRED Data, which MRED may modify in its sole discretion from time to time.

Licensed Data: That subset of the MRED Data Licensed for use under this Agreement, which is more fully described in Exhibit A. If no such description appears in Exhibit A, then the Licensed Data consists of those records and fields typically provided by MRED for use by other licensees of the MRED Data, which MRED may modify in its sole discretion from time to time.

Licensed Marks: Those trademarks, service marks, word marks, logos and distinctive marks of all other kinds, if any, set out in Exhibit A as Licensed Marks. If no Licensed Marks appear in Exhibit A, then there are no Licensed Marks.

Licensed Materials: The Licensed Data and Licensed Marks.

MRED Data: Data relating to real estate for sale, previously sold, or listed for sale and data relating to Subscribers (including text, photographs, and all other data formats now known or hereafter invented) entered into the MRED's databases by Subscribers and MRED.

Subscriber: Any real estate broker, appraiser, or real-estate-related business professional that purchases multiple listing services from MRED.

LICENSE

2. MRED grants to Licensee the license to copy, distribute, and display the Licensed Materials, only to the extent necessary to achieve the purposes set out in Exhibit B, only during the term of this Agreement, and only to the extent permitted by and subject at all times to the terms

and restrictions of this Agreement. This Agreement is a non-exclusive license, and not a sale, assignment, or exclusive license. MRED retains all rights not expressly granted herein.

3. MRED represents that MRED has no actual knowledge that should reasonably cause MRED to conclude that the Licensed Materials infringe the rights of any third party.

DATA ACCESS

4. During the term of this Agreement, MRED shall provide to Licensee access to the Licensed Data via the Data Interface described in Exhibit A.

LICENSEE'S ACKNOWLEDGEMENTS

5. Licensee acknowledges that MRED provides the Licensed Data on an as-is, as-available basis. MRED shall not be liable to Licensee for any claim arising from inaccuracies in the Licensed Data or any failure, whether on the part of Licensee or of MRED, to update the data promptly.

6. Licensee is responsible for any liability or loss of goodwill associated with problems in data integrity, accuracy, or timeliness arising from Licensee's use of the Licensed Data.

7. The listings of some Subscribers may not be included in the Licensed Data if the listing Subscriber's or Seller's permission is required under MRED's policies before its listings may be distributed to Licensee.

LICENSEE'S OBLIGATIONS

8. Licensee shall display the MRED copyright notice on each display screen, web page (whether Internet- or Intranet-based), and printout displaying any part of the Licensed Data. The MRED copyright notice may take either of the following two forms: (a) "Copyright 2010 Midwest Real Estate Data LLC" or (b) "© 2010 Midwest Real Estate Data LLC". Licensee shall replace "2010" with the current year as of January 1 of each year.

9. Licensee shall employ reasonable measures to prevent "data piracy" and other unauthorized access and use of the Licensed Data; from time to time, MRED may, in its sole discretion, specify particular reasonable security measures Licensee must take.

10. Licensee shall not make the Licensed Data or the Confidential Information available to any third party unless expressly authorized to do so under this Agreement.

11. Licensee shall pay the initial and periodic fees and provide the other consideration set forth in Exhibit D, if any, according to the terms set forth therein. Licensee shall be liable for all costs, including reasonable attorney fees, associated with collecting amounts due under this Agreement.

12. Licensee acknowledges that, as among the parties to this Agreement, MRED is sole owner of and possesses all right, title, and interest in all copyrights in the Licensed Data.

13. Licensee warrants that any effort or use of the MRED Data will not constitute patent infringement of any third party.

14. Licensee shall conform to the supplemental use restrictions set forth in Exhibit C, if any.

AUDITS OF COMPLIANCE

15. MRED may, or at its option may engage an independent third party to, review, inspect, and test the books, records, equipment, and facilities of Licensee to the extent reasonably necessary to ascertain Licensee's compliance with this Agreement (an "Audit"). MRED may conduct an Audit upon any notice reasonable under the circumstances.

Audit activities may include, without limitation, obtaining full access to Licensee's web sites and systems to ensure that Licensed Data is displayed in accordance with the MRED Policies; using all features available to end-users of Licensee's systems that employ the Licensed Data; and posing as consumers to register and test services Licensee makes available to consumers using the Licensed Data. MRED shall pay the costs it incurs, and the out-of-pocket costs Licensee incurs, as part of any Audit; Licensee shall be liable, however, for all costs of any Audit that discloses that Licensee has breached this Agreement.

CONFIDENTIAL INFORMATION

16. Each party shall protect the Confidential Information with the same degree of care it takes to protect its own sensitive business information of like kind, but in no event less than reasonable care. A party may disclose Confidential Information if law, court order, or regulation requires such disclosure; provided, however, that party makes commercially reasonable efforts to notify the other party in writing in advance of such disclosure.

17. Within five days after the termination of this Agreement, each party shall return to the other party all Confidential Information and all other materials provided by the other party hereunder. Licensee shall also erase, delete, or destroy any Confidential Information stored on magnetic media or other computer storage, including system backups. Upon the request of either party, an officer of the other party shall certify in writing that all materials have been returned and all magnetic or computer data have been destroyed.

TERM AND TERMINATION

18. The term of this Agreement begins on the date that MRED signs it. This Agreement shall terminate upon the occurrence of any of the following events: (a) 30 days after either party's notice to the other of its intent to terminate; (b) 10 days after either party's notice to the other that the other has breached this Agreement, provided the breach remains uncured; (c) immediately upon any party's notice to another that the other has breached this Agreement, provided the breach is not susceptible to cure, is one of a pattern of repeated breaches, or has caused the party giving notice irreparable harm. In the event of any suspension or termination of this Agreement, Licensee shall make no further use of the Licensed Data or any derivative works based on it until and unless Licensee's rights under this Agreement are restored.

19. In the event Licensee breaches this Agreement and entitles MRED to terminate under Paragraph 18, MRED may in its sole discretion suspend its performance instead of terminating this Agreement. MRED may make this election by notice to Licensee within three days after the initiation of the suspension. Licensee's obligations hereunder continue during any period of suspension.

GENERAL PROVISIONS

19. **Applicable law.** The laws of the State of Illinois shall govern this Agreement and its interpretation. Any action to enforce or interpret this Agreement shall have venue in DuPage or Cook County, Illinois, and the parties hereby submit to personal jurisdiction in that venue.

21. **Survival of Obligations.** Paragraphs 1, 10, 12, 13, 16, and 17, and Paragraphs 20 through 32, and all Exhibits to which they refer, shall survive termination or expiration of this Agreement.

22. **MRED's Remedies.** (a) Injunctive relief. Because of the unique nature of the MRED Data and Confidential Information, Licensee acknowledges that MRED would suffer irreparable harm in the event that Licensee breaches its obligations under this Agreement, and that monetary damages would be inadequate to compensate MRED for a breach. MRED is therefore entitled, in addition to all other forms of relief, to injunctive relief as may be necessary to restrain any threatened, continuing, or further breach by Licensee without showing or proving any actual damages sustained by MRED, and without posting any bond or

other security. (b) Liquidated damages: Licensee acknowledges that damages suffered by MRED from access to the Licensed Data or Confidential Information by an unauthorized third party as a result of disclosure of any passwords or an unauthorized disclosure of the Licensed Data or Confidential Information to a third party would be speculative and difficult to quantify. Accordingly, as a material inducement to MRED to enter into this Agreement, Licensee agrees that in the event Licensee discloses any password to access the Licensed Data or Confidential Information or discloses the Licensed Data or the Confidential Information to any unauthorized third party, regardless of whether such disclosure is intentional or negligent, Licensee shall be liable to MRED for liquidated damages in the amount of \$30,000 for each such disclosure and termination of this Agreement.

23. **Limitation of liability/exclusion of warranties.** IN NO EVENT SHALL MRED BE LIABLE TO LICENSEE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES OF ANY KIND WHATSOEVER ARISING FROM ANY BREACH OF THIS AGREEMENT, EVEN IF MRED HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES; LICENSEE'S SOLE REMEDIES AGAINST MRED HEREUNDER SHALL BE TERMINATION OF THIS AGREEMENT AND DIRECT DAMAGES NOT IN EXCESS OF THE AMOUNTS LICENSEE HAS PAID TO MRED HEREUNDER IN THE 12 MONTHS IMMEDIATELY PRECEDING THE FIRST EVENT GIVING RISE TO ANY CLAIM FOR BREACH. MRED DISCLAIMS ALL REPRESENTATIONS AND WARRANTIES EXCEPT THOSE EXPRESSLY SET FORTH IN THIS AGREEMENT. THIS PARAGRAPH SETS OUT LICENSEE'S EXCLUSIVE REMEDIES, AND UNDER NO CIRCUMSTANCES SHALL LICENSEE BE ENTITLED TO EQUITABLE REMEDIES, EXCEPT IN THE EVENT MRED BREACHES OR THREATENS TO BREACH PARAGRAPH 16. MRED makes no warranty, including those of title, availability, or non-infringement, regarding marks licensed under this Agreement, if any.

24. **Attorney's fees.** If any party prevails in any action to enforce or interpret this Agreement or any provision hereof, it shall be entitled to its reasonable attorney's fees and costs for such legal action.

25. **Indemnification.** Subject to Paragraph 23, in the event any party breaches any provision of this Agreement, that party (the "Indemnifying Party") shall indemnify the other parties, their subsidiaries and affiliated companies, and all their respective employees, directors, agents, and authorized successors and assigns (the "Indemnified Parties"), against any and all losses, damages, and costs (including reasonable attorneys' fees) arising from each claim of any third party resulting from the Indemnifying Party's breach. Licensee indemnifies MRED, MRED's Subscribers, or customers of MRED or MRED's Subscribers, to whom Licensee provides a product or service using MRED Data, against any and all losses, damages, and costs (including reasonable attorneys' fees) arising from any third party claim of patent infringement. The Indemnified Parties shall (a) promptly notify the Indemnifying Party in writing of any claim and give the Indemnifying Party the opportunity to defend or negotiate a settlement of any such claim at the Indemnifying Party's expense, and (b) cooperate fully with the Indemnifying Party, at the Indemnifying Party's expense, in defending or settling any such claim. The Indemnified Parties shall be entitled to engage their own local counsel at the Indemnifying Party's expense.

26. **Notice.** All notices to be given under this Agreement shall be mailed, sent via facsimile transmission, or electronically mailed to the parties at their respective addresses set forth herein or such other address of which any party may advise the others in writing during the term of this Agreement; and shall be effective the earlier of the date of receipt or three days after mailing or other transmission.

27. **No Waiver.** No waiver or modification of this Agreement or any of its terms is valid or enforceable unless reduced to writing and signed by the party who is alleged to have waived its rights or to have agreed to a modification.

Midwest Real Estate Data LLC

Data License and Access Agreement for Vendors

Exhibit A: Definitions and Specification of Licensed Materials and Data Interface

Definitions

These definitions apply to Exhibits A – D.

Firm: Real estate brokerage firm participating in MRED.

Firm-Related Persons: Licensee and employees of Firm who are not Salespersons or broker/managers.

Firm Internal Use: Any use of those portions of the MRED Data relating to Firm's own listings; and any use of those portions of the MRED Data relating to listings of Participants other than Firm that exposes MRED Data only to Firm-Related Persons and to Salespersons affiliated with Firm, subject to the MRED Policies.

IDX: Use and display of portions of the MRED Data under the MRED's Broker Reciprocity Program provisions of the MRED Policies.

MRED Policies: MRED's Rules and Regulations, as amended from time to time, and any operating policies promulgated by MRED.

Participant: This term has the meaning given to it in the MRED Policies. For purposes of this Agreement, "Participant" does not apply to participants of MLSs other than MRED. "Participant" also includes Salespersons affiliated with those Participants for whom the Participants are responsible under the laws of the State of Illinois.

Salesperson: Any person holding a real estate license in Illinois who is not a Participant but who is subject to a Participant's supervision under the laws of Illinois.

Second Level Domain: "Second Level Domain" has the meaning given to it in this paragraph. "URL" means a web address, including the "http://" and any material appearing after a slash in the address. "Domain Name" means a URL, less the "http://" and any material appearing to the right of the next slash ("/") in the address. (So for example, in the URL "Http://janesmith.abcrealty.com/homepage.html", the Domain Name is "JANESMITH.ABCREALTY.COM".) "Top Level Domain" means the portion of the Domain Name to the right of the right-most period. (In the example, "COM".) "Second Level Domain" means that portion of a domain name to the left of the right-most period, up to the second period from the right, if any, plus the Top Level Domain. (In the example, "ABCREALTY.COM".) "Third Level Domain" means that portion of a domain name to the left of the second period from the right, if any, up to the third period from the right, if any, plus the Second Level Domain. (In the example, "JANESMITH.ABCREALTY.COM".).

VOW: Use and display of portions of the MRED Data under the Virtual Office Website (VOW) provisions of the MRED Policies.

Data Interface

MRED agrees to provide to Licensee, during the term of this Agreement, (a) access to the MRED Data via the Data Interface under the same terms and conditions MRED offers to other MRED Participants; (b) seven days' advance notice of changes to the Data Interface; and (c) seven days' advance notice of changes to the MRED Policies. MRED does not undertake to provide technical support for the Data Interface or the MRED Data. The Data Interface, together with access to the MRED Data, may from time-to-time be unavailable, whether because of technical failures or interruptions, intentional downtime for service or changes to the Data Interface, or otherwise. Any interruption or unavailability of access to the Data Interface or MRED Data shall not constitute a default under this Agreement.

Midwest Real Estate Data LLC Data License and Access Agreement for Vendors

Exhibit B: Licensee's Purpose and Use of Licensed Materials

Licensee shall use the MRED Data obtained under this Agreement to provide MRED Participants services for Firm Internal Use, IDX, and VOW use only. Any other use is strictly prohibited. Participants may display the MRED Data on a web site available to the public only to the extent permitted by the MRED Policies. The provisions of this paragraph shall survive the expiration or other termination of this Agreement in perpetuity.

Midwest Real Estate Data LLC Data License and Access Agreement for Vendors

Exhibit C: Supplemental Restrictions on Licensee's Use of Licensed Materials

Licensee shall immediately correct any breach of this Agreement or violation of the MRED Policies within its control, whether committed by Participant or Licensee, upon notice from MRED.

Licensee shall not challenge or take any action inconsistent with MRED's and Participants' ownership of or rights in the MRED Data. The provisions of this paragraph shall survive the expiration or other termination of this Agreement in perpetuity.

Licensee shall not make the MRED Data or the Confidential Information available to any third party, except on behalf of Participants and in a manner consistent with Participants' obligations under Exhibit B; nor shall it make any other use of the MRED Data, whether commercial or personal. The provisions of this paragraph shall survive the expiration or other termination of this Agreement in perpetuity.

Licensee shall provide MRED on a monthly basis, or at MRED's request, a written report including MRED Participants receiving Licensed Data under this Agreement, and those Participants' second and third level domain names of resident sites on which MRED Data obtained under this agreement is displayed. The written report shall take the form of an Excel spreadsheet, to include agent names, agent ID numbers, office names, office ID numbers, city, phone number, and domain names for each Participant.

List Products/Services utilizing MRED Data:

Midwest Real Estate Data LLC Data License and Access Agreement for Vendors

Exhibit D: Fees and Consideration

Licensee shall pay the fees, if any, that MRED customarily charges other MRED Participants for data access. Licensee acknowledges receipt of MRED's current schedule of such fees, if any. MRED may in its sole discretion establish or modify its schedule of fees upon 30 days' written notice to Licensee. Licensee shall be liable for all costs, including reasonable attorney fees, associated with collecting amounts due under this Agreement.